

Control of Mosquitoes utilizing Biomathematical Techniques in Villa Clara Territory in Veterinaria

Sultanah Almasi
University of Pennsylvania

Abstract: The point is to assess the effectiveness of two types of freshwater angle and furthermore utilize the numerical displaying in capacity of the control of the mosquito's larvae in Villa Clara region. On account of fish, an accomplice study was completed, in the towns of Baez and Guaracabulla, which have a place with Placetas region, looking into was begun in April of 2006 until April of 2007, for this, an example of 1740 supplies was picked, isolated in two gatherings: one of them with 870 stores, (3 fish for every unit were put every repository, attempting to keep the commonness of females on guys 2-1) and another universe, with a similar measure of beneficiaries, however no fish right now. Concerning scientific demonstrating of general and explicit larval densities, the information of the two densities were prepared for nine districts of Villa Clara region for each long stretch of the year, covering a period from the year 2000 until 2009; additionally, the estimations of these larval densities were related with eight climatic factors to get the expectation models every month. The danger of discovering places that are sure to the nearness of mosquitoes (In our Health System, "centers") was prevalent in the gathering of stores where they were not presented to the nearness of fish; for every 100 stores with fish, 8 focal points of mosquitoes were evacuated; forecast models of general and explicit larval densities were acquired for the nine districts remembered for this investigating, just as the pandemic notices at short and medium term. The larvivorous fish are an amazing choice to control the larvae of mosquito in the supplies that individuals use to store water; the scientific demonstrating is a decent instrument for the expectation and control of the larval densities of mosquitoes in repositories of Villa Clara area.

Keywords: Copepods, Mesocyclops aspericornis, Mathematical demonstrating, larvivorous fish, Villa Clara

Introduction

The battle among man and bugs started some time before the start of development, has proceeded ceaselessly until the present, and will proceed without question, as long as humankind persists¹. A large number of individuals experience the ill effects of diseases transmitted by arthropod vectors; among them, the culicids are unmistakably those of more noteworthy sterile clean significance, particularly in the tropical and subtropical regions²⁻³; They are answerable for the upkeep and transmission of the pathogens that cause dengue, yellow fever, intestinal sickness, lymphatic filariasis, West Nile infection and a few deadly and crippling infections⁴⁻⁵. These issues are presently joined by an Earth-wide temperature boost and the increase of outrageous meteorological marvels, which has realized changes in the conduct of sicknesses and their transmitters, with the foundation of vector species in places at no other time registered⁶⁻⁷. Given the intense showdown with vector-borne ailments, because of the rise and advancement of etiological operators impervious to drugs, bug spray safe mosquitoes, high market costs, natural contamination, among different troubles; established researchers progressively organizes natural control methods^{8,10}, so as to supplement an increasingly effective and continued coordinated control; to which other logical orders have joined, for example, Geography, Molecular Biology, Mathematics, Computation, among numerous others. For all the abovementioned, we set out to assess the

viability of two types of waterway fish, together with scientific displaying dependent on the control of mosquito hatchlings in the Villa Clara area.

Results and discussion

Stores that were ensured with fish seeding, the presence of mosquito foci was low, didn't surpass 1% of the complete holders secured with fish (870 stores). Recurrence measures (hazard in uncovered and unexposed) yielded values with exceptionally high contrasts (0.00919 versus 0.0862), where the relative water system esteem was under 1, showing that the nearness of fish in the compartments It establishes a security factor against the occurrence of mosquito foci, which permits us to express that for each 100 tanks treated with fish, eight foci are maintained a strategic distance from, in this manner, to forestall a center, it is important to treat 13 stores.

The year under examination in our exploration dependent on the larval densities for the nine districts, permitted us to display both the General Larval Density and the Anophelinic during the a year of the year, having the option to decide the pinnacle months or with the most noteworthy qualities for the two densities, with over a month ahead of time, and right now, have the option to set up the Epidemiological Bulletins of the Villa Clara area for the two densities, in light of arrangement of conjectures that permit us to recognize between amazingly high qualities, exceptionally high, even, From low to medium, here we depend on the "sham" variable models, as appeared in charts 1 and 2 to acquire these numerical demonstrating of larval densities. With these models the densities could likewise be corresponded with the eight climatic factors that were broke down.

Conclusions

Because of the outcomes got, without a doubt that larvivorous fish establish a successful alternative in the control of mosquito hatchlings in repositories used to store water, a perspective that coordinates the outcomes acquired by Mathur¹⁴, just as those accomplished by Hernández and Marquez¹⁵ in the region Taguasco, Sancti Spíritus territory, yet with the species *Poecilia reticulata* Peter, 1895 to control hatchlings of the *Stegomyia aegypti* species, both in low and raised tanks. Clearly, the organic battle against mosquitoes turns out to be progressively significant in light of the enthusiasm for the world to diminish the utilization of synthetic bug sprays, and in this way accomplish generous natural assurance, a viewpoint that could be found in our exploration, on the grounds that The utilization of these two species forestalled 89.0% of the foci in these two areas, which reaffirmed what was recently expressed by Vargas¹⁶, Hernández et al¹⁷ and Rojas et al¹⁸.

References

1. Metcalf CL, Flint WP. Insectos destructivos e insectos útiles: sus costumbres y su control. México, DF.: CECSA. 1991, 1208 p.
2. Beerntsen BT, James AA, Christensen BM. Genetics of Mosquito Vector Competence. *Microbiol Mol Biol Rev.* 2000; 64(1):115-137.
3. Chandra G, Bhattacharjee I, Chatterjee SN, Ghosh A. Mosquito control by larvivorous fish. *Indian J Med Res.* 2008; 127:13-27.

4. Luciano PG, Ricardo JP, Ferreira AC, Francisco J, Rodrigo LF, José L . Efficacy of fish as predators of *Aedes aegypti* larvae, under laboratory conditions. Rev Saúde Pública 2007; 41:4. [online] Disponible.
5. Guzmán MG, Kourí G. Dengue: an update. Lancet Infect Dis. 2002; 2(1):33-42.